UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/205,094	12/03/1998	HIROYUKI OKADA	018656-045	8215

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EXAMINER
VILLECCO, JOHN M

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 01/30/2004

15

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/205,094	OKADA, HIROYUKI
	Examiner	Art Unit
	John M. Villecco	2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *13 November 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION III

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

2. This action is non-final due to the new grounds of rejection presented below for claims 6-9 and 14-16, which was not necessitate by the amendment. The examiner apologizes for the delay in prosecution.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. <u>Claims 1-5, 10-13, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nohda (U.S. Patent No. 6,295,087) in view of Konishi (U.S. Patent No. 4,574,319).</u>

5. Regarding *claim 1*, Nohda discloses an image pickup apparatus having an interpolation function. More specifically, Nohda teaches a specific embodiment of his invention in which a camera first interpolates image data within the camera and then sends it to a computer where is it interpolated using a different process. The camera includes an image pickup device (11, CCD), which inherently has color filters that perform color separation associated with it, an A/D

converter (14), a data processor (31, simplified interpolation circuit) that interpolates for missing

pixels for each color using a simplified interpolation process, and a computer, which serves as

the external device, that interpolates for missing pixels using an adaptive interpolation process

which is different from the first process. Although not specifically disclosed, Official Notice is

taken as to the fact that it is well known in the art to display interpolated image data on a display

disposed on the camera.

Nohda, however, fails to specifically disclose a recording device that records data

regarding the alignment of the color filters. Konishi, on the other hand, teaches that it is well

known in the art to save information regarding the arrangement of the color filter array along

with the image data. See column 4, line 57 to column 5, line 26. When the image is reproduced

the data is used for compensation in image reproduction (col. 6, lines 10-12). By storing the

additional information onto the recorder (9) the processing can be performed correctly depending

on the type of filter being used. Therefore, it would have been obvious to one of ordinary skill in

the art at the time the invention was made to send filter data along with the image in Nohda so

that proper processing can be carried out by the computer system (30B) and different color filters

can be used.

6.   As for *claim 2*, although Nohda discloses the use of a bi-directional bus (33) for

transmitting image data to the computer (30B), it would have been obvious to use a removable

memory to also transmit the image data. Official Notice is taken as to the fact that it is well

known in the art to transmit image data from a camera to computer using a memory card. The

use of a memory card allows the camera an increased mobility in that it can be taken anywhere

and it is free from cables connecting it to the computer. Therefore, it would have been obvious

to one of ordinary skill in the art at the time the invention was made to have recording device be

a memory card so that the camera is given increased mobility.

7.   With regard to *claim 3*, Nohda discloses a PC interface (32, 34) and a bus (33) for

outputting the image data to the external device. When used in conjunction with Konishi, it

would have been obvious to output the filter alignment data also.

8.   Regarding *claim 4*, Nohda discloses an image pickup apparatus having an interpolation

function. More specifically, Nohda teaches a specific embodiment of his invention in which a

camera first interpolates image data within the camera and then sends it to a computer where is it

interpolated using a different process. The camera includes an image pickup device (11, CCD),

which inherently has color filters that perform color separation associated with it, an A/D

converter (14), a data processor (31, simplified interpolation circuit) that interpolates for missing

pixels for each color using a simplified interpolation process, and a computer, which serves as

the external device, that interpolates for missing pixels using an adaptive interpolation process

which is different from the first process. Nohda discloses a PC interface (32, 34) and a bus (33)

for outputting the image data to the external device.

Nohda, however, fails to specifically disclose a recording device that records data

regarding the alignment of the color filters. Konishi, on the other hand, teaches that it is well

known in the art to save information regarding the arrangement of the color filter array along

with the image data. See column 4, line 57 to column 5, line 26. When the image is reproduced

the data is used for compensation in image reproduction (col. 6, lines 10-12). By storing the

additional information onto the recorder (9) the processing can be performed correctly depending

on the type of filter being used. Therefore, it would have been obvious to one of ordinary skill in

the art at the time the invention was made to send filter data along with the image in Nohda so

that proper processing can be carried out by the computer system (30B) and different color filters

can be used.

9.   As for *claim 5*, although not specifically disclosed, Official Notice is taken as to the fact

that it is well known in the art to display interpolated image data on a display disposed on the

camera. This allows the user to view a high quality image on the camera so that the image can

be verified before being sent to the computer. Therefore, it would have been obvious to one of

ordinary skill in the art to display the interpolated image on a display on the camera

10.   With regard to *claim 10*, Nohda discloses an image pickup apparatus having an

interpolation function. More specifically, Nohda teaches a specific embodiment of his invention

in which a camera first interpolates image data within the camera and then sends it to a computer

where is it interpolated using a different process. The camera includes an image pickup device

(11, CCD), which inherently has color filters that perform color separation associated with it, an

A/D converter (14), a data processor (31, simplified interpolation circuit) that interpolates for

missing pixels for each color using a simplified interpolation process, and a computer, which

serves as the external device, that interpolates for missing pixels using an adaptive interpolation

process which is different from the first process. Although not specifically disclosed, Official

Notice is taken as to the fact that it is well known in the art to display interpolated image data on

a display disposed on the camera.

Nohda, however, fails to specifically disclose a recording device that records data

regarding the alignment of the color filters. Konishi, on the other hand, teaches that it is well

known in the art to save information regarding the arrangement of the color filter array along

with the image data. See column 4, line 57 to column 5, line 26. When the image is reproduced the data is used for compensation in image reproduction (col. 6, lines 10-12). By storing the additional information onto the recorder (9) the processing can be performed correctly depending on the type of filter being used. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to send filter data along with the image in Nohda so that proper processing can be carried out by the computer system (30B) and different color filters can be used.

11.   Regarding *claim 11*, although Nohda discloses the use of a bi-directional bus (33) for transmitting image data to the computer (30B), it would have been obvious to use a removable memory to also transmit the image data. Official Notice is taken as to the fact that it is well known in the art to transmit image data from a camera to computer using a memory card. The use of a memory card allows the camera an increased mobility in that it can be taken anywhere and it is free from cables connecting it to the computer. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have recording device be a memory card so that the camera is given increased mobility.

12.   As for *claim 12*, Nohda discloses a PC interface (32, 34) and a bus (33) for outputting the image data to the external device. When used in conjunction with Konishi, it would have been obvious to output the filter alignment data so that the computer is informed of the filter arrangement data.

13.   With regard *to claim 13*, Nohda discloses an image pickup apparatus having an interpolation function. More specifically, Nohda teaches a specific embodiment of his invention in which a camera first interpolates image data within the camera and then sends it to a computer

where is it interpolated using a different process. The camera includes an image pickup device (11, CCD), which inherently has color filters that perform color separation associated with it, an A/D converter (14), a data processor (31, simplified interpolation circuit) that interpolates for missing pixels for each color using a simplified interpolation process, and a computer, which serves as the external device, that interpolates for missing pixels using an adaptive interpolation process which is different from the first process. Nohda discloses a PC interface (32, 34) and a bus (33) for outputting the image data to the external device.

Nohda, however, fails to specifically disclose a recording device that records data regarding the alignment of the color filters. Konishi, on the other hand, teaches that it is well known in the art to save information regarding the arrangement of the color filter array along with the image data. See column 4, line 57 to column 5, line 26. When the image is reproduced the data is used for compensation in image reproduction (col. 6, lines 10-12). By storing the additional information onto the recorder (9) the processing can be performed correctly depending on the type of filter being used. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to send filter data along with the image in Nohda so that proper processing can be carried out by the computer system (30B) and different color filters can be used.

14.   Regarding *claim 17*, in additional embodiments, Nohda discloses the use of a system controller (90) to control the operation of the camera. Without the use of the system controller, the interpolation circuits would not be able to process the image data. Therefore, the system controller would inherently be part of the data processor since it is necessary to enable the operation of the interpolation circuits.

15.   *Claim 19* is considered substantively equivalent to claim 17. Please see the discussion of

claim 17 above.

16.   **Claims 6, 8, 9, 14, 16, 18, and 20 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Nohda (U.S. Patent No. 6,295,087) in view of Konishi (U.S. Patent No.

4,574,319) and further in view of Parulski et al. (U.S. Patent No. 5,040,068).

17.   With regard to *claim 6*, Nohda discloses an image pickup apparatus having an

interpolation function. More specifically, Nohda teaches a specific embodiment of his invention

in which a camera first interpolates image data within the camera and then sends it to a computer

where is it interpolated using a different process. The camera, which serves as a first site,

includes an image pickup device (11, CCD), which inherently has color filters that perform color

separation associated with it, an A/D converter (14), and a computer, which serves as the second

site, that interpolates for missing pixels using an adaptive interpolation process which is different

from the first process. Nohda discloses a PC interface (32, 34) and a bus (33) for outputting the

image data to the external device. Nohda also discloses a monitor (50) for displaying the

interpolated image data.

        Nohda, however, fails to explicitly state simultaneously storing image data and filter

information and then transmitting the data to the second site. Konishi, on the other hand, teaches

that it is well known in the art to save information regarding the arrangement of the color filter

array along with the image data. See column 4, line 57 to column 5, line 26. When the image is

reproduced the data is used for compensation in image reproduction (col. 6, lines 10-12). By

storing the additional information onto the recorder (9) the processing can be performed

correctly depending on the type of filter being used. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to send filter data along with the image to the computer in Nohda so that proper processing can be carried out by the computer system (30B) and different color filters can be used.

Konishi, however, only discloses storing the filter data when the memory card is loaded. Parulski, on the other hand, discloses that it is well known in the art to use different color filters in the same camera. See column 4, lines 4-19. Konishi teaches saving the filter data as soon as the memory card is loaded. Konishi does this because he assumes that the filter will never be changed. The Konishi patent also teaches storing variable image data for each image simultaneously. See column 5, lines 10-63. Therefore, if different types of filters are used, it would have been obvious to one of ordinary skill in the art at the time the invention was made to store the filter data simultaneously with the captured image data depending upon the type of filter used to capturing the image so that processing can be performed according to the type of filter used.

18.   Regarding *claim 8*, Nohda teaches performing a simplified interpolation using the simplified interpolation circuit (31) in the camera. The simplified-interpolated image data is then sent to the PC (30B) where an adaptive interpolation is performed. In each case the type of filter being used would have to be known in order to perform the interpolation correctly.

19.   As for *claim 9*, Official Notice is taken as to the fact that it is well known in the art to compress image data before transferring it to an external site. Compressing an image conserves both memory and bandwidth when transmitting. Therefore, it would have been obvious to

compress the image before transmitting the image so that memory is conserved and bandwidth is reduced.

20.   *Claim 14* is considered substantively equivalent to claim 6. Please see the discussion of claim 6 above.

21.   *Claim 16* is considered substantively equivalent to claim 8. Please see the discussion of claim 8 above.

22.   With regard to *claim 18*, as mentioned above in the discussion of claim 1, both Nohda and Konishi disclose all of the limitations of the parent claim. However, neither of the aforementioned references discloses simultaneously recording the image data and filter data. Parulski, on the other hand, discloses that it is well known in the art to use different color filters in the same camera. See column 4, lines 4-19. Konishi teaches saving the filter data as soon as the memory card is loaded. Konishi does this because he assumes that the filter will never be changed. The Konishi patent also teaches storing variable image data for each image simultaneously. See column 5, lines 10-63. Therefore, if different types of filters are used, it would have been obvious to one of ordinary skill in the art at the time the invention was made to store the filter data simultaneously with the captured image data depending upon the type of filter used to capturing the image so that processing can be performed according to the type of filter used.

23.   *Claim 20* is considered substantively equivalent to claim 18. Please see the discussion of claim 18 above.

24.   <u>Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over</u>

<u>Nohda (U.S. Patent No. 6,295,087) in view of Konishi (U.S. Patent No. 4,574,319) and</u>

<u>further in view of Parulski et al. (U.S. Patent No. 5,040,068) and Rashkovskiy et al. (U.S.</u>

<u>Patent No. 6,181,376).</u>

25.   Regarding *claim 7*, as mentioned above in the discussion of claim 6, Nohda, Konishi, and

Parulski, disclose all of the limitations of the parent claim. Nohda discloses that each of the

pixels generates data relating to one of three colors. However, none of the aforementioned

references discloses that the complete color data comprises a combination of all three colors for

any individual pixel. Nohda discloses performing the interpolation in the computer using only

the red and green color components. Rashkovskiy, on the other hand, teaches a system that

operates to generate red, green and blue pixel data for each of the photosites. See column 4, line

62 to column 5, line 15. By allowing the system to interpolate for each of the colors, the final

image is of higher quality. Therefore, it would have been obvious to one of ordinary skill in the

art at the time the invention was made to interpolate for each of the colors so that complete

image data is obtained for each pixel, thereby forming a higher quality image.

26.   *Claim 15* is considered substantively equivalent to claim 7. Please see the discussion of

claim 7 above.

Any response to this action should be mailed to:

                    Commissioner of Patents and Trademarks
                    Washington, D.C. 20231
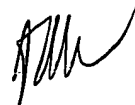
              or faxed to:

(703) 872-9306 (For either formal or informal communications intended for entry. For informal or draft communications, please label **"PROPOSED"** or **"DRAFT"**)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Villecco whose telephone number is (703) 305-1460. The examiner can normally be reached on Monday through Thursday from 7:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber, can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service desk whose telephone number is (703) 306-0377.

JMV
1/13/04

NGOC-YEN VU
PRIMARY EXAMINER